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EXAMINER	
BROWN, LAMARR	
ART UNIT	PAPER NUMBER
2858	

NOTIFICATION DATE	DELIVERY MODE
03/18/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Chgpatent@leydig.com

Office Action Summary	Application No.	Applicant(s)	
	10/581,818	POOL, WIEBEREN	
	Examiner	Art Unit	
	LAMARR BROWN	4134	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) *14-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 20-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *June 2, 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1 – 13 and 20 - 33 in the reply filed on 4 February 2011 is acknowledged.

2. Claims 14 – 19 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, Group III, and Group IV, there being no allowable generic or linking claims. Election was made **without** traverse in the reply filed on 4 February 2011.

Specification

3. The disclosure is objected to because of the following informalities: page 16, line 2; "...the soil. .Apart from ceramic..." page 30, line 23; "..."electric voltage) between..."

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

Claim Objections

5. Claims 31 and 32 are objected to under 37 CFR 1.75(c), as being of duplicates of claims 11 an12, respectively.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 2, 5, 6, 20, 21, 22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro et al. (US 6255551 B1) (hereinafter Shapiro) in view of Griffith et al. (5584980) (hereinafter Griffith).

Concerning claim 1, Shapiro shows (Fig. 2) obtaining information indicative of electrical resistances (20) of paths from surfaces of respective ones of the electrodes into the soil (3) (col. 9; lines 58 – 67);

detecting whether increases occur in the electrical resistances (col. 10; lines 32 – 40) and (col. 10; lines 41 – 52);

temporarily reducing electrical current at least through a particular electrode in a path from which an increase of electrical resistance is detected, to a stepped down level, in response to said detection (col. 10; lines 43 – 52).

Shapiro does not expressly disclose placing a plurality of electrodes in the soil at respective positions in a land area and supplying electric current through the electrodes.

Griffith (Fig. 1A) shows placing a plurality of electrodes (13, 17, 15 and 19) [13 and 15 are the anodes; 17 and 19 are the cathodes] in the soil (11) at respective positions in a land area (col. 6; lines 38 – 43) and supplying electric current (Fig. 3A; 18) through the electrodes (12 [anode row] and 16 [cathode row]).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the Griffith placing a plurality of electrodes in the soil at respective positions in a land area in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 2, Shapiro with Griffith teaches voltage differences are applied between electrodes (col. 10; lines 43 – 46) from a first group (Griffith, Fig. 1A; 13 and 15) and electrodes from a second group (Griffith, Fig. 1A; 17 and 19), said obtaining step -comprising measuring overall resistance information

indicative of resistances from respective electrodes of the first group to one or more neighboring electrodes from the second group (col. 9; lines 63 – 67), said overall resistance information being used to detect resistance increases during the detecting step (col. 10; lines 36 – 40), the method comprising eliminating at least part of an effect of soil resistivity on said detecting (col. 10; lines 41 – 52).

Concerning claim 5, Shapiro with Griffith teaches the information indicative of electrical resistances of paths into the soil from surfaces of respective ones of the electrodes is obtained for respective ones (Shapiro; Fig. 2; 20; lines 59 – 67; col. 10; lines 1 – 7) or sub-groups of the electrodes individually; the current being reduced only in a particular electrode (Fig. 2; col. 10; lines 41 - 52) or group, in response to detection of said increase in resistance in the path from the particular electrode or sub-group.

Shapiro with Griffith does not expressly disclose electrical resistances of paths into the soil from surfaces of respective ones of sub-groups of the electrodes individually, but Shapiro can be pre-programmed control unit to obtain ones of the sub-groups electrical resistances of the electrodes (col. 10; lines 41 - 46).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a per-programmed control unit to obtain ones of the sub-groups electrical resistances of the electrodes in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 6, Shapiro with Griffith teaches circulating liquid containing acid (Griffith, Fig. 3A, 20) and/or another *complexing* agent (Shapiro; col. 5, lines 57 - 65) around the surface of the cathodes (Griffith; Fig. 3A; 20);

obtaining said information indicative of electrical resistances of paths into the soil from surfaces of respective ones of the cathodes (Shapiro, Fig. 2; col. 10; lines 33 – 40);

temporarily reducing electrical current at least through a particular cathode in the path from which an increase of the electrical resistance is detected, to a stepped down level, in response to said detection (Shapiro, Fig. 2; col. 10; lines 41 – 52).

Concerning claim 20, Shapiro (Fig. 2) shows a control circuit arranged to monitor information (col. 9, lines 58 – 67 and col. 10, lines 1 - 7) indicative of electrical resistances of paths into the soil from surfaces of respective ones of the electrodes, to detect increases of the electrical resistances and to temporarily reduce electrical current from the electric power supply source at least through a particular electrode in the path from which an increase of the electrical resistance is detected, to a stepped down level, in response to detection of said increase (col. 10, lines 41 – 52).

Shapiro does not expressly disclose a plurality of electrodes in the soil at respective positions in a land area and an electric power supply source coupled to supply electric current through the electrodes.

Griffith (Fig. 1A) shows a plurality of electrodes in the soil at respective positions in a land area (col. 6, lines 32 – 49) and an electric power supply

source coupled to supply electric current through the electrodes (Griffith, Fig. 3A, 18).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the Griffith placing a plurality of electrodes in the soil at respective positions in a land area in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 21, Shapiro with Griffith teaches opposite poles of the electric power supply source (Griffith, Fig. 3A, 18) are coupled to a first (Griffith, Fig. 3A, 12) and second (Griffith, Fig. 3A, 16) group of electrodes respectively, the system comprising sensors (Shapiro, Fig. 2, 20) coupled to respective connections between the electric power supply source (Shapiro, Fig. 2, 23) and respective ones of the electrodes (Shapiro, Fig. 2, 24), the sensors being arranged to provide the control circuit (Shapiro, Fig. 2, 22) with information indicative of respective current-voltage ratio's, each between a current through a respective electrode from the first group and a voltage difference between the respective electrode from the first group and one or more electrodes from the second group, the control circuit deriving the information indicative of electrical resistances for each respective electrode from the respective current-voltage ratio for that respective electrode (Shapiro, col. 10, lines 32 – 52).

Concerning claim 22, Shapiro with Griffith teaches the control circuit is arranged to eliminating eliminate at least part of an effect of soil resistivity on the

information indicative of respective current-voltage ratio's on the detection of the increases (Shapiro, Fig. 2, lines 41 – 52).

Concerning claim 26, Shapiro with Griffith the electrodes include anodes (Griffith, Fig. 3A, 12) and cathodes (Griffith, Fig. 3A, 16) placed interspersed with one another in the soil Griffith, Fig.3A, 10), the system comprising

a liquid circulation sub-system arranged to circulate liquid containing acid and (Griffith, Fig. 3A, 20)/or other *complexing* agents (Shapiro, col. 5, lines 57 – 65) around the surface of the cathodes (Griffith, Fig. 3A, 16);

the control circuit monitoring said information indicative of electrical resistances of paths into the soil from surfaces of respective ones of the cathodes, and temporarily reducing electrical current at least through a particular cathode in the path from which an increase of the electrical resistance is detected, to a stepped down level, in response to said increase (Shapiro, col. 10, lines 32 – 51).

9. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro, Griffith as applied to claim 2 and 1 above, and further in view of Carrigan et al. (US 2003/0024815 A1) (hereinafter Carrigan).

Concerning claim 3, Shapiro with Griffith teaches measuring voltage drop information indicative of a voltage drop along a path through the soil starting from said further electrode (Shapiro; Fig. 4; electrodes 13, 14, 15 and 16) [col. 9; lines 17 - 57) and using the voltage drop information to remove at least part of an effect of soil resistivity on the overall resistance information on said detecting (Shapiro; col. 10; lines 41 - 52).

Shapiro with Griffith does not expressly disclose placing at least one further electrode in the soil at a distance from said electrodes.

Carrigan (Fig. 2B) shows placing at least one further electrode (16) in the soil at a distance from said electrodes (11, 12, 13 14 and 15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the Carrigan placing at least one further electrode in the soil at a distance from other electrodes in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 4, Shapiro with Griffith teaches measuring a voltage drop from each of the further electrodes (14 and 15) to its respective electrode (14 and 15) and determining the information indicative of electrical resistances from the measured voltage drops (col. 9. lines 48 – 57).

Shapiro with Griffith does not expressly disclose placing a plurality of further electrodes in the soil, each at a distance from a respective electrode but closer to said respective electrode than any one of the other electrodes of said further electrodes.

Carrigan (Fig. 4) shows disclose placing a plurality of further electrodes (42, 43, 44, 45, 46, and 47) in the soil, each at a distance from a respective electrode but closer to said respective electrode than any one of the other electrodes of said further electrodes (41).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the Carrigan electrode configuration in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

10. Claims 7, 8, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro, Griffith as applied to claim 6 above, and further in view of Itsekson et al. (US 2002/0125144 A1) (hereinafter Itsekson).

Concerning claim 7, Shapiro with Griffith discloses all of the elements, except for a predetermined time interval.

Itsekson (Fig. 4) shows a predetermined time interval.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Itsekson predetermined time interval in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 8, Shapiro with Griffith discloses all of the elements, except for the predetermined time interval has a duration of between five minutes and two hours.

Itsekson (Fig. 4) shows except for the predetermined time interval has a duration of between five minutes and two hours [0031], [0032].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Itsekson predetermined time interval has duration

of between five minutes and two hours in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 9, Shapiro, Griffith with Itsekson (Itsekson; Fig. 4) shows the current to the particular cathode is reduced substantially to zero (τ_1) [0033].

Concerning claim 10, Shapiro, Griffith with Itsekson shows the current through a particular anode that is placed closest to the particular cathode (Griffith, Fig. 1A) is stepped down to reduce the current through the particular cathode (Itsekson, Fig. 4; from t_1 to τ_1).

11. Claims 11,12, 13, 31, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro, Griffith as applied to claim 6 above, and further in view of Zarkhin et al. (US 2004/0135586 A1) (hereinafter Zarkhin).

Concerning claim 11, Shapiro with Griffith discloses all of the elements, except for the controlled to maintain a regulated average level, independent of soil resistivity, while not reduced.

Zarkhin (Fig. 2) shows a device to maintain a regulated average level, independent of another resistor (46) (independent of soil resistivity), while not reduced [0022] and [0023]. {Note: That the other resistor (Zarkhin, 12) will be the uncontaminated soil.}

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Zarkhin controlled to maintain a regulated average level, independent of soil resistivity in Shapiro for the benefit to determine the

current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 12, Shapiro, Griffith with Zarkhin teaches the set level substantially equals an equilibrium level at which a rate of formation of hydroxyl ions (Shapiro, col. 5, lines 57 – 67 and col. 6; lines 1 – 9) due to the current (Shapiro, col. 10, lines 41 - 52) is in equilibrium with a rate of removal of the hydroxyl ions by acid from the circulating liquid (Griffith, Fig. 3A, col. 8, lines 31 – 65).

Concerning claim 13, Shapiro, Griffith with Zarkhin teaches the stepped down level is substantially below the equilibrium level (Shapiro, col. 10, lines 32 - 52).

Concerning claim 31, is rejected as the same as claim 11.

Concerning claim 32, is rejected as the same as claim 12.

Concerning claim 33, is rejected as the same as claim 13.

12. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro, Griffith as applied to claims 22 and 20 above, and further in view of Carrigan.

Concerning claim 23, Shapiro with Griffith discloses all of the elements, except for at least one further electrode in the soil at a distance from said electrodes.

Carrigan (Fig. 2B) shows at least one further electrode (16) in the soil at a distance from said electrodes (11, 12, 13, 14, and 15).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the Carrigan placing at least one further electrode in the soil at a distance from other electrodes in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 24, Shapiro with Griffith discloses all of the elements, except for a plurality of further electrodes in the soil, each at a distance from a respective electrode but closer to said respective electrode than any one of the other electrodes of said further electrodes.

Carrigan (Fig. 4) shows disclose placing a plurality of further electrodes (42, 43, 44, 45, 46, and 47) in the soil, each at a distance from a respective electrode but closer to said respective electrode than any one of the other electrodes of said further electrodes (41).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the Carrigan electrode configuration in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro, Griffith as applied to claim 20 above, and further in view of Zarkhin.

Concerning claim 25, Shapiro with Griffith discloses all of the elements, except for the information indicative of electrical resistances of paths into the soil

from surfaces of respective ones of the electrodes is monitored for the respective ones of the electrodes individually.

Zarkhin (Fig. 2) shows the information indicative of electrical resistances of paths into the soil from surfaces of respective ones of the electrodes (46) is monitored for the respective ones of the electrodes individually (12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Zarkhin one of the electrode is monitored for the respective one of the electrodes individually in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

14. Claim 27, 28, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro, Griffith as applied to claim 26 above, and further in view of Itsekson.

Concerning claim 27, Shapiro with Griffith discloses all of the elements, except for a predetermined time interval.

Itsekson (Fig. 4) shows a predetermined time interval.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Itsekson predetermined time interval in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 28, Shapiro with Griffith discloses all of the elements, except for the predetermined time interval has a duration of between five minutes and two hours.

Itsekson (Fig. 4) shows except for the predetermined time interval has a duration of between five minutes and two hours [0031], [0032].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Itsekson predetermined time interval has duration of between five minutes and two hours in Shapiro for the benefit to determine the current through selected electrodes is temporarily stepped down if the onset of boiling is detected from an increase in the electrical resistances from an electrode into the soil.

Concerning claim 29, Shapiro, Griffith with Itsekson (Itsekson; Fig. 4) shows the current to the particular cathode is reduced substantially to zero (τ_1) [0033].

Concerning claim 30, Shapiro, Griffith with Itsekson shows the current through a particular anode that is placed closest to the particular cathode (Griffith, Fig. 1A) is stepped down to reduce the current through the particular cathode (Itsekson, Fig. 4; from t_1 to τ_1).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, as follows: O'Neil (5757197) [Shows electrodes immersed

in a volume of water or other conducting medium do not exhibit a resistance to current flow that is proportional to the lineal distance between them.]; Pugh (5976348) [Teaches soils are decontaminated in situ by transporting peroxysulfate ions through the soil under the influence of an electric field.]; and Montgomery et al. (US 2001/0030539 A1) [Teaches monitor the progress of secondary oil recovery during water or steam floods.].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAMARR BROWN whose telephone number is (571)270-5632. The examiner can normally be reached on 8:30 am - 4:40 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LAMARR BROWN/
Examiner, Art Unit 2858

/Ha T. Nguyen/
Supervisory Patent Examiner, Art Unit 2858